



# MARIE CURIE –A WOMEN ACHIEVER, A HISTORIC REVIEW ABOUT HER CONTRIBUTIONS.

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Words are not enough to speak about Marie Curie, a responsible daughter, mother and wife, who worked for development of society. She had forethought towards well being of the society and her work was appreciated by great scientist Sir Albert Einstein. She dedicated her whole life for the improvement of science and became famous all over the world.

She was the first lady who got Nobel Prize and the first person and the only woman to win Nobel Prize twice in two scientific fields (Physics and Chemistry). Later her investigations have become a base for the scientific improvements all over the world. Her husband, Pierre Curie, was a co-winner of her first Nobel Prize, making them the first-ever married couple to win the Nobel Prize and launching the Curie family legacy of five Nobel Prizes. She was, in 1906, the first woman to become a Professor at the University of Paris.

During the period when research was dominated by male workers, Marie Curie selected research field and completely involved in research work which was very dangerous. She worked on radio activity. A new element discovered by her was named Radium. Her husband, daughter and son-in law all are Nobel Prize winners. Hers' is the only family who got five Nobel prizes and it is a history now.

In 1896, Henry Becquerel discovered a new element Uranium by detecting a new radiation emitted by uranium. This phenomenon is known as Radio activity and the element is called radioactive element. Later Berzelius discovered another radioactive element Thorium.

Inspired by Henry Becquerel, a family friend of Marie Curie took up research in the field of radioactivity. Becquerel and Marie Curie shared 1903 Nobel Prize in physics. Curie discovered that radio activity depends on N/P ratio (neutron to proton ratio) of the element. For this work, she again independently got Noble Prize in chemistry field in 1911.

Marie Curie was born on 7 November 1867 in Poland. At the age of 9, she lost her mother. With all family problems, she has completed her education in native schools and she learnt scientific knowledge and techniques from her father who was a physics teacher. From her childhood itself, she developed interest in science. In 1893, she got degree in physics and stood first in the college. Many senior French scientists helped her to get polish scholarship to overcome financial problem. Before completing degree in mathematics, she studied on magnetic and chemical properties of steel.

In 1894, she comes in contact with Pierre who was an ideologist and international physicist. This incident has changed her life style. He completely dedicated his life to the development of scientific activities. He was not interested in fame, name, position and money. He is 8 years older to Marie Curie. Later their friendship was converted into love and they had faith on each other and they got married.

Henry Becquerel was a good friend to this couple and he discussed the radioactive properties of uranium with them. Inspired by this, Curie couple continued the research on radioactivity and discovered new element radium. For this novel work, they awarded Nobel Prize in 1911.

At the age of 38, Marie Curie lost her husband in an accident. She came out of this shock and worked hard and continued research. In 1903, she got doctorate degree. In 1898, she discovered another new radioactive element and named polonium in honour of her mother land Poland. Polonium is 100 times more radioactive than uranium.

When Marie Curie got her second Nobel Prize in chemistry, many people criticized her. But all over the world, majority of chemists appreciated her work and expressed that, after the discovery of oxygen, discovery of radium and polonium is the greatest work which is a milestone in chemistry. Conversion of one element into another element has become an important phenomenon and many people started working in this direction.

During her last span of life, Marie Curie saw her daughter and son-in-law who were also involved in research work and was happy with their achievements. Marie Curie died on July 4<sup>th</sup> 1934, at the age of 66, in France due to aplastic anemia. This is mainly due to exposure to radiation for long time during the course of her scientific research and in the course of her radiological work at field hospitals during World War-I causing damage to her bone marrow. Next year i.e. in 1935, Curie's daughter Iren with her husband awarded Nobel Prize.

After this work, more and more research work was done and 30 new elements were discovered. New techniques were developed to separate radioactive elements from the mixture. Separation of pure radium was greatest achievement which Curie could not achieve.

Marie Curie is the brave lady and inspired many ladies to involve in scientific activities. Under her direction, the world's first studies were conducted for the treatment of neoplasms by the use of radioactive isotopes. She founded the Curie Institute in Paris in 1920, and Curie Institute in Warsaw in 1932; both remain major medical research centers. During World War-I she developed mobile radiography units to provide X-ray services to field hospitals.

She got many more prizes and awards apart from Nobel Prizes. Few of them are as follows.

- Nobel Prize in Physics (1903, with her husband Pierre Curie and Henri Becquerel)
- Davy Medal (1903, with Pierre)
- Matteucci Medal (1904, with Pierre)
- Actonian Prize (1907)
- Elliott Cresson Medal (1909)
- Nobel Prize in Chemistry (1911)
- Franklin Medal of the American Philosophical Society (1921).

In 1995 she became the first woman to be entombed on her own merits in the Paris Panthéon, and Poland declared 2011 the Year of Marie Curie during the International Year of Chemistry. She is the subject of numerous biographical works,

In honour of Marie Curie and Pierre Curie, The unit of radioactivity is called as Curie (symbol Ci). Marie Curie remains immortal in the heart of many people and her name will remain as long as people are studying radioactivity.

### References:

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4. *"Marie Curie and Her Legend". American Institute of Physics. Archived from the original on 1 January 2012. Retrieved 7 November 2011.*

